A machine for cloning plant cuttings automatically using water culture

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Title of the Invention

A machine for cloning plant cuttings automatically using water culture

Cross Reference to Related Applications

Not Applicable

Statement Regarding Federally Sponsored Research or Development

Not Applicable

Description of Attached Appendix

Not Applicable

Background of the Invention

This invention relates generally to the field of agriculture and more specifically to a machine for cloning plant cuttings automatically using water culture.

Hydroponics is a method of soilless gardening in which plants are grown in chemical nutrient solutions, may help meet the need for greater food production as the world's population increases.

In 1936, W. F. Gericke and J. R. Travernetti of the University of California published an account of the successful cultivation of tomatoes in a water and nutrient solution. Since then a number of commercial growers started experimenting with the techniques, and researchers and agronomists at a number of agricultural colleges began working to simplify and perfect the procedures. Numerous hydroponic units, some on a very large

scale, have been built in Mexico, Puerto Rico, Hawaii, Israel, Japan, India, and Europe. In the United States, without much public awareness, hydroponics has become big business, more than 500 hydroponic greenhouses have been started.

Dr. Gericke's application of hydroponics soon proved itself by providing food for troops stationed on non-arable islands in the Pacific in the early 1940s.

The water-culture method is used widely for botanical experimentation. A common type of water culture consists of glazed porcelain jars filled with solution; the plants are placed in beds of glass wool or similar material that are supported at the surface of the solution. Roots of the plants penetrate
the beds and remain in the solution.

Asexual propagation is the production of new plants from the leaves, stems, or roots of a single parent plant. Asexual propagation, which does not require pollination or fertilization, is a rapid method of propagation. It ensures that all of the parent's genetic material
survives even if the parent dies, and it creates offspring, known as clones, with the same traits as the parent plant. Asexual propagation is advantageous when plants are well adapted to a particular environment. Several methods of asexual propagation occur in nature. They have been adapted for commercial use for rapid propagation and to obtain plants that are hard to grow from seeds.

With the development of plastics, hydroponics took another large step forward. If there is one single factor that could be credited with making the hydroponics industry the success it is today, that factor is plastics. As mentioned earlier, one of the most

pressing problems encountered everywhere was the constant leaching of detrimental elements into the solution from concrete, rooting media, and other materials. With the advent of fiberglass and such plastics as the different types of vinyl, polyethylene film, and the many kinds of plastic pipe, this problem was virtually eliminated. In the better producing systems being built in the world today plastics are used throughout, and other than a few isolated bronze valves, there is absolutely no metal. Even the pumps are epoxy coated. Using these types of materials, along with an inert material as a rooting medium, the grower is well on his way to success.
similar hydroponic units include U.S. patent numbers 5,440,836, 5,555,676, 5,918,416, 4,033,072, 5,095,650, 4,850,135, 4,218,847

cloning systems on the market require expensive high pressure pumps to operate misters or foggers which can become clogged, the present invention uses an inexpensive fountain style pump,with large inside diameter supply line where clogging is not possible. using the water culture method for propagating plant cuttings insures plant cuttings will not dry out due to clogged fittings.

cloning systems on the market often require additional purchase of lights, light support systems, fans, and covers for there systems, the present invention comes complete with lights, light support, cover and ventilation by means of convection using heat emitted from lights,and strategic placement of ventilation slots in cover and light support. thereby making the unit self contained.

Brief Summary of the Invention

The primary object of the invention is To provide a plant cloning machine that is

automatic.

Another object of the invention is To provide a plant cloning machine that is self-contained.

Another object of the invention is To provide a plant cloning machine that can also be used as a contemporary table.

A further object of the invention is To provide a plant cloning machine with a reservoir that has a built in storage area.

Yet another object of the invention is To provide a plant cloning machine that uses less water than other systems on the market.

Still yet another object of the invention is To provide a plant cloning machine that uses less space (including space used by artificial lighting) than other systems on the market.

Other objects and advantages of the present invention will become apparent from the following descriptions, taken in connection with the accompanying drawings, wherein, by way of illustration and example, an embodiment of the present invention is disclosed.

In accordance with a preferred embodiment of the invention, there is disclosed a machine for cloning plant clippings automatically using water culture comprising: a reservoir and storage area with two supports to hold back of reservoir cover and means for power cord to exit unit, a reservoir tray with two drains, an inlet tube, and means for water pump cord to exit reservoir nutrient holding area , a reservoir tray cover with a plurality of holes for foam plant cutting supports and two supports to hold front of reservoir cover, a reservoir cover with with slots for ventilation and structure for

mounting light support, a light support made from clear acrylic that fits inside reservoir cover with slots for ventilation, a water pump, an air pump, an aerator, and a plurality of fluorescent light fixtures.

Brief Description of the Drawings

The drawings constitute a part of this specification and include exemplary embodiments to the invention, which may be embodied in various forms. It is to be understood that in some instances various aspects of the invention may be shown exaggerated or enlarged to facilitate an understanding of the invention.

Figure 1 is a perspective view of the invention.

Figure 2 is an exploded view of the invention.

Figure 3 is a schematic of the reservoir and storage area.

Figure 4 is an exploded view of the tray and tray cover.

Figure 5 is an schematic of the cover and light support (with lights installed).

Detailed Description of the Preferred Embodiments

Detailed descriptions of the preferred embodiment are provided herein. It is to be understood, however, that the present invention may be embodied in various forms. Therefore, specific details disclosed herein are not to be interpreted as limiting, but rather as a basis for the claims and as a representative basis for teaching one skilled in the art to employ the present invention in virtually any appropriately detailed system, structure or manner.

Turning now to Fig. 1 of the drawings, a perspective view of the preferred embodiment of the present invention is shown by reference numeral 10. The machine is constructed in the shape of a cube that is divided in the center horizontally 12. also shown in fig 1 are the ventilation slots 51 that are positioned on the back panel of the reservoir cover 50. In the preferred embodiment the machine would be made of .25 inch thick black acrylic sheet or similar material except for the light support 53 winch will be made of clear acrylic or similar material.

The operation of the present invention may be understood upon reference to Fig. 2, 3, 4 and 5 . When the machine is assembled (as in Fig. 1) the water pump 36 pumps nutrient solution from the reservoir 30 to the tray 41 and is returned to reservoir 30 through the drain fittings 42 which are positioned to maintain a nutrient level that is about half the depth of the tray 41. there is also an aerator 37 (located in the reservoir 30 near the water pump 36) that provides oxygen to the nutrient solution via an air

pump 38 and air line 40. the air pump 38 is supported by a foam vibration dampener 39 and located in reservoir storage area. The air line 40 is attached to the air pump 38 and extends through a notch in the tray cover 49 and the structure provided in the tray 41 for power cord and air line 44. The end of the air line 40 is connected to the aerator 37. The tray 41 is supported by the tray support 31 and tray support legs 32 at such a level that the tray cover 46 is flush with the top of the reservoir and storage area when assembled, thereby positioning the front cover supports 45 to prevent cover 50 from sliding when assembled as in Fig.1. the back cover supports 33 are mounted permanently to the reservoir 30 in the storage area. Also in the storage area is a notch 35 for power cord to exit machine.

Having observed the details of the reservoir and storage area 30, the tray 41 and tray cover 46 attention may now be given to the cover 50 (Fig. 5) The light support 53 is positioned in the center of the cover 50 horizontally and is attached to the cover and structural supports 52. The cover 50 and light support 53 have a plurality of ventilation slots 51 that provide fresh air to plant cuttings(not shown)supported by foam plant cutting supports(not shown) located in the tray cover 46(fig. 2) via convection caused by heat emitted from fluorescent light fixtures 54.

One of the features of the invention in the preferred embodiment to have a removable inspection lid 55 where said lid has inspection lid supports 56 to prevent lid from sliding when positioned as in Fig.1. alternatively said lid could be permanently mounted to cover 50 and light support 53 would be removable.

an additional feature of the invention is the fact that when the machine is filled with nutrient solution and plant cuttings are inserted ,cover 50 is placed on top of

reservoir 30 and power is applied, after setting up the machine initially, no human intervention is necessary during the cloning cycle thereby making the machine automatic, an additional feature of the invention is the fact that the machine includes lighting and ventilation, thereby making the machine self contained.

While the invention has been described in connection with a preferred embodiment, it is not intended to limit the scope of the invention to the particular form set forth, but on the contrary, it is intended to cover such alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.